

U.S. Department of the Interior
Bureau of Land Management
Little Snake Field Office
455 Emerson Street
Craig, CO 81625-1129

ENVIRONMENTAL ASSESSMENT

EA-NUMBER: CO-100-2006-008 EA

CASEFILE/PROJECT NUMBER/LEASE NUMBER:

Sparks Ridge Unit Well #1: COC02981
Hiawatha Deep Well #7: COD051417
Hiawatha Deep Well #15: COC0122825

PROJECT NAME: Three QEP Wells

LEGAL DESCRIPTION: All three wells in Moffat County, Colorado

Sparks Ridge Unit Well #1: SWSW Sec. 5, T11N, R101W, 6th PM
Hiawatha Deep Unit Well #7: Lot 5 Sec. 16, T12N, R100W, 6th PM
Hiawatha Deep Unit Well #15: Lot 3 Sec. 21, T12N, R100W, 6th PM

APPLICANT: Questar Exploration and Production Company and Wexpro Company

PLAN CONFORMANCE REVIEW: The proposed action is subject to the following plan:

Name of Plans: Little Snake Resource Management Plan and Record of Decision (ROD) approved on April 26, 1989; and the Colorado Oil and Gas Leasing & Development Environmental Impact Statement (EIS) and the ROD signed on November 5, 1991.

Remarks: The proposed Three QEP Wells would be located within Management Unit 2 (Little Snake Resource Management Plan). One of the objectives of Management Unit 2 is to provide for the development of the oil and gas resource. The development of other resource uses/values within this unit is allowed consistent with the management objectives for oil, gas, and forest resources.

The proposed action has been reviewed for conformance with this plan (43 CFR 1610.5, BLM 1617.3). The proposed action is in conformance with the objectives for this management unit.

NEED FOR PROPOSED ACTION: To provide for the development of oil and gas resources and to supply energy resources to the American public.

PUBLIC SCOPING PROCESS: The Notices of Staking (NOS) have been posted in the public room of the Little Snake Field Office for a 30-day public review period beginning November 4, 2005 when the NOSs were received, and may be viewed during regular business hours (7:45 a.m. to 4:30 p.m.), Monday through Friday, except holidays.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES: The proposed action is to approve three Applications for Permit to Drill (APD) submitted by Questar Exploration and Production Company (QEP) and Wexpro Company. These two sister companies propose to drill three gas wells on BLM administered land located in the Hiawatha Field. APDs have been filed with the LSFO for Sparks Ridge Well #1 and Hiawatha Deep Wells #7 and #15. The APDs include drilling and surface use plans that cover mitigation of impacts to vegetation, soil, surface water, and other resources. Mitigation not incorporated by Wexpro Company in the drilling and surface use plans would be attached by the BLM as Conditions of Approval to an approved APD.

The proposed wells are located approximately 50 miles southeast of Rock Springs, Wyoming. Construction work is planned to start during the summer of 2006 and the estimated duration of construction and drilling for each of the wells is 55 days. Short access roads would be constructed for each well. Total surface disturbance for road construction would be approximately 2.5 acres. All road construction would be on lease and on BLM surface and would not require a federal Right-of-Way.

The proposed well pad would be cleared of all vegetation and leveled for drilling. Topsoil and native vegetation would be stockpiled for use in reclamation. Approximately 3.5 acres would be disturbed for construction of each well pad. This would include the 400' by 325' well pad, the topsoil, and subsoil piles. A reserve pit would be constructed on the well pad to hold drill mud and cuttings. If a well is a producer, cut portions of the well site would be backfilled and unused portions of the well site would be stabilized and re-vegetated. If a gas well proves unproductive, it would be properly plugged and the entire well pad and access road would be reclaimed.

QEP and Wexpro did include plans for gas sales pipelines with the Hiawatha Deep Well # 7 and #15 APDs. Approximately 2,781 feet of new gas pipeline would be installed and connected to existing gas pipelines in the Hiawatha Deep Unit. New gas pipeline installation would be buried and occur within and adjacent to the new access road construction. All gas pipeline construction would be on federal surface and within the Hiawatha Deep Unit or on State of Colorado surface. A federal right-of-way for the pipeline is not required.

QEP and Wexpro did not include plans for a gas sales pipeline for the Sparks Ridge Unit Well #1. A detailed written statement of work (Sundry Notice) would be filed with the BLM before pipeline installation for this well. This Sundry Notice would be assessed, when it is received, for environmental impacts of a gas sales pipeline.

NO ACTION ALTERNATIVE: The "no action" alternative is that the wells would not be permitted and therefore no wells would be drilled. QEP holds a valid and current oil and gas lease for the area where the proposed Three QEP Wells would be located. Under leasing

contracts, the BLM has an obligation to allow mineral development if the environmental consequences are not irreversible or too severe. The APD process is designed to overcome the no action situation of not accepting the APD through the mitigation of predicted environmental consequences. Since the proposed action is consistent with the ROD and the Oil and Gas Leasing EIS, rejecting the APDs for the wells was considered but will not be analyzed further in this EA.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES/MITIGATION MEASURES

CRITICAL RESOURCES

AIR QUALITY

Affected Environment: There are no special designation air sheds or non-attainment areas nearby that would be affected by the proposed action.

Environmental Consequences: Short term, local impacts to air quality from dust would result during and after well pad construction. Drilling operations produce air emissions such as exhaust from diesel engines that power drilling equipment. Air pollutants could include nitrogen oxides, particulates, ozone, volatile organic compounds, fugitive natural gas, and carbon monoxide. Gas flaring reduces the health and safety risks in the vicinity of the well by burning combustible and poisonous gases like methane and hydrogen sulfide. The proposed action will not adversely affect the regional air quality.

Mitigative Measures: None

Name of specialist and date: Barb Blackstun 03/06/06

AREA OF CRITICAL ENVIRONMENTAL CONCERN

Affected Environment: Not present.

Environmental Consequences: Not applicable.

Mitigative Measures: Not applicable

Name of specialist and date: Jim McBrayer 02/28/06

CULTURAL RESOURCES

Affected Environment: Cultural resources, in this region of Colorado, range from late Paleo-Indian to Historic. For a general understanding of the cultural resources in this area of Colorado, see An Overview of Prehistoric Cultural Resources, Little Snake Resource

Area, Northwestern Colorado, Bureau of Land Management Colorado, Cultural Resources Series, Number 20, An Isolated Empire, A History of Northwestern Colorado, Bureau of Land Management Colorado, Cultural Resource Series, Number 2 and Colorado Prehistory: A Context for the Northern Colorado River Basin, Colorado Council of Professional Archaeologists.

Environmental Consequences: The proposed projects, have undergone a Class III cultural resource survey:

Murcary, Dirk
2005 Questar Gas Management Hiawatha Deep #15 Pipeline Class III Cultural Resource Inventory. 05-WAS-1025; BLM 12.6.06. Western Archaeological Services, Rock Springs, Wyoming.

Murcary, Dirk
2005 Wexpro Company Hiawatha Deep #15 Well and Access Road Class III Cultural Resource Inventory. 05-WAS-1024; BLM 12.7.06. Western Archaeological Services, Rock Springs, Wyoming.

Murcary, Dirk
2005 Wexpro Company Hiawatha Deep #7 Well and Access Road Class III Cultural Resource Inventory. 05-WAS-1053; BLM 12.4.06. Western Archaeological Services, Rock Springs, Wyoming.

Murcary, Dirk
2005 Questar Gas Management Hiawatha Deep #7 Pipeline Class III Cultural Resource Inventory. 05-WAS-1054; BLM 12.5.06. Western Archaeological Services, Rock Springs, Wyoming.

Erickson, Jan
2006 Questar Exploration and Production Sparks Unit #1 Well and Access Road Class III Cultural Resource Inventory. 05-WAS-974; BLM 12.20.06. Western Archaeological Services, Rock Springs, Wyoming.

The survey identified no eligible to the National Register of Historic Places prehistoric cultural resources. The proposed project may proceed as described in this EA with the following mitigative measures in place.

Mitigative Measures:

The following standard stipulations apply for this project:

1. The operator is responsible for informing all persons who are associated with the operations that they will be subject to prosecution for knowingly disturbing historic or

archaeological sites, or for collecting artifacts. If historic or archaeological materials are encountered or uncovered during any project activities, the operator is to immediately stop activities in the immediate vicinity of the find and immediately contact the authorized officer (AO) at (970) 826-5000. Within five working days, the AO will inform the operator as to:

- Whether the materials appear eligible for the National Register of Historic Places;
- The mitigation measures the operator will likely have to undertake before the identified area can be used for project activities again; and
- Pursuant to 43 CFR 10.4(g) (Federal Register Notice, Monday, December 4, 1995, Vol. 60, No. 232) the holder of this authorization must notify the AO, by telephone at (970) 826-5000, and with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.

2. If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

Name of specialist and date: Henry S. Keesling 01/26/06

ENVIRONMENTAL JUSTICE

Affected Environment: The project would not directly affect the social, cultural, or economic well being and health of Native American, minority or low-income populations. The project area is relatively isolated from population centers, so no populations would be affected by physical or socioeconomic impacts from the project.

Environmental Consequences: None.

Mitigative Measures: None.

Name of specialist and date: Louise McMinn 02/23/06

FLOOD PLAINS

Affected Environment: Active floodplains and flood prone zones are avoided.

Environmental Consequences: No threat to human safety, life, welfare, or property will result from the proposed action.

Mitigative Measures: None

Name of specialist and date: Barb Blackstun 02/24/06

INVASIVE, NONNATIVE SPECIES

Affected Environment: Halogeton (*Halogeton glomeratus*) and cheatgrass (*Bromus tectorum*) are known to occur along roadsides, well pads and other disturbed areas. Given an opportunity, both these species are capable of out competing native vegetation communities, and becoming the dominant cover type without management. Several biennial thistles are known to occur in this area given wet enough conditions. The potential for other noxious weeds to occur exists given favorable climatic and growing conditions.

Environmental Consequences: The surface disturbing activities and associated traffic involved with drilling three new wells and upgrading and constructing new access roads will create a favorable environment, and provide a mode of transport, for invasive species and other noxious weeds to become established. Invasive species can be spread through a variety of means including vehicular travel, wind, water, wildlife, and livestock movement. Required mitigation attached as Conditions of Approval to minimize disturbance, and the utilization of interim reclamation techniques would facilitate control of invasive species and reduce the potential of long-term infestation of annual and noxious weed species. All principles of Integrated Pest Management should be employed to control noxious weeds on public lands.

Mitigative Measures: None

Name of specialist and date: Curtis Bryan 02/27/06

MIGRATORY BIRDS

Affected Environment: There are numerous historical ferruginous hawk nest sites within 1 mile of the proposed Sparks Ridge Well # 1 site. The Hiawatha Deep # 7 and # 15 wells are not within migratory bird nesting habitat.

Environmental Consequences: Impacts to raptor species from oil and gas development are discussed in the Colorado Oil and Gas EIS (1991). Impacts include, but are not limited to, nest abandonment, decreased nest attendance and elimination of essential habitat components. To prevent significant impacts to raptor species, construction and drilling activities should not be allowed during breeding, nesting and raising of the young. Disturbance from oil and gas activities during these critical periods may displace raptors to less suitable nesting habitat, or result in the mortality of young from nest abandonment or decreased nest attendance. White and Thurow (1985) found that 33% of ferruginous hawks respond to disturbances by abandoning nest sites. The study also found that disturbed nests “fledged significantly fewer young ($P < 0.05$) than undisturbed nests.” As the number of

active nests decrease in an area, it is even more important to protect the remaining pairs that still utilize this area. Managing species diversity is important to managing healthy, productive ecosystems. Surface disturbance restrictions designed to protect wintering pronghorn antelope and breeding and nesting sage-grouse will indirectly protect nesting ferruginous hawks near the Sparks Ridge Well #1 site. This will leave little potential for take to occur.

Mitigative Measures: None

Name of specialist and date: Timothy Novotny 02/28/06

NATIVE AMERICAN RELIGIOUS CONCERNS

A letter was sent to the Uinta and Ouray Tribal Council, Southern Ute Tribal Council, Ute Mountain Ute Tribal Council, and the Colorado Commission of Indian Affairs on January 21, 1999. The letter listed the projects that the BLM would notify them on and projects that would not require notification. No comments were received (Letter on file at the Little Snake Field Office). This project requires no additional notification.

Name of specialist and date: Henry S. Keesling 01/26/06

PRIME & UNIQUE FARMLANDS

Affected Environment: Not Present

Environmental Consequences: None

Mitigative Measures: None

Name of specialist and date: Barb Blackstun 02/24/06

T&E SPECIES – ANIMALS

Affected Environment: There are no threatened or endangered species or habitat for such species in or near the proposed project area. The proposed Sparks Ridge Well # 1 project area contains suitable wintering and nesting habitat for greater sage-grouse, a BLM special status species. The Hiawatha Deep # 7 and # 15 wells are not within critical sage grouse habitat.

Environmental Consequences: Approximately 7.0 acres of sage grouse habitat would be altered with the proposed action. Clearing vegetation would increase fragmentation within the sagebrush ecosystem and may degrade sage grouse habitat. The proposed well site for the Sparks Ridge #1 well is located within 1.7 kilometers of an active lek and provides nesting habitat for sage grouse. If drilling activities were to take place during the breeding or nesting season (March 1 to June 30), significant impacts to sage grouse using this habitat

would be expected. Impacts to grouse species from oil and gas development are discussed in the Colorado Oil and Gas EIS (1991). Impacts include, but are not limited to, displacement into less suitable habitat, nest abandonment, destruction of nests and loss of habitat. Other impacts, such as habitat fragmentation and the spread of exotic plants can also degrade sage grouse habitat (Connelly et al. 2004). Noise and increased human activity related to drilling can disrupt breeding and nesting (Connelly et al. 2004). Holloran and Anderson (2004) found a higher annual decline in male lek attendance at leks within 3.2km from drilling activity. To prevent significant impacts to sage grouse species, construction and drilling activities associated with the proposed access road and well pad should not be permitted from March 1 to June 30. This timing limitation would prevent accidental nest destruction, nest and lek abandonment and displacement into less suitable habitat. Holloran (2005) recommends “At a minimum, all areas within 5 km of known leks meeting the breeding habitat shrub requirements outlined in the sage-grouse habitat management guidelines (Connelly et al. 2000b) should be considered suitable and protected from development.” Individual well pad construction would not have significant negative impacts on sage grouse habitat, however, the cumulative impacts of existing development already existing in the area, will continue to degrade grouse habitat. Holloran (2005) found “that areas with relatively high well densities present within the area of interest during this study (i.e. 16 ha well spacing present in the Jonah Fields; Figure 3) contained well densities that were high enough to exclude nesting females.” Oil and gas development may lead to decreased sage grouse use of this area.

Noise and increased human presence related to construction and drilling activity can disturb grouse using winter habitat. These impacts can be negligible to major, depending on such variables as the timing and duration of the activity and the severity of the winter. During the winter months, sage grouse are almost entirely dependent on sagebrush for food and cover. Sage grouse rely on areas where sagebrush protrudes above snow cover or on wind swept ridges and plateaus devoid of snow. The sagebrush stands in the vicinity of proposed well site and roads exhibit characteristics that provide important habitat for sage grouse during winter months. Noise and increased human presence from construction and drilling activities may displace sage grouse from using winter habitat near the proposed well sites. Due to surface disturbance restrictions between December 1 and April 30 that protect wintering pronghorn antelope, greater sage-grouse are unlikely to be disturbed during winter months.

Mitigative Measures: CO-30 For the Sparks Ridge Unit Well #1, sage grouse leks will be avoided by 2 miles between March 1 and June 30 to protect nesting sage grouse.

Name of specialist and date: Timothy Novotny 02/28/06

T&E SPECIES – PLANTS

Affected Environment: There are no federally listed threatened or endangered plant species within or in the vicinity of any of the three proposed wells.

Environmental Consequences: None

Mitigative Measures: None

Name of specialist and date: Hunter Seim 02/22/06

T&E SPECIES - SENSITIVE PLANTS

Affected Environment: There are no BLM sensitive plant species within or in the vicinity of any of the three proposed wells.

Environmental Consequences: None

Mitigative Measures: None

Name of specialist and date: Hunter Seim 02/22/06

WASTES, HAZARDOUS OR SOLID

Affected Environment: If the release does occur, the environment affected would be dependent on the nature and volume of material released. If there are no releases, there will be no impact on the environment.

Environmental Consequences: Consequences will be dependent on the volume and nature of the material released. In most every situation involving hazardous materials, there are ways to remediate the area that has been contaminated. Short-term consequences will occur, but they can be remedied, and long-term impacts will be minimal.

Mitigative Measures: None

Name of specialist and date: Duane Johnson 02/16/06

WATER QUALITY – GROUND

Affected Environment: Fresh water within the Wasatch Formation may occur. Water within the Wasatch Formation in existing wells within T.12N., R.100W., sections 22 and 23 ranges from 1,402 ppm TDS to 30,599 ppm TDS. Potable water is highly unlikely in this area. The surface casing will be adequate to protect any fresh water zones, coupled with production casing and cement behind pipe from TD to surface.

Environmental Consequences: With the use of proper construction practices, drilling practices, and with best management practices no significant adverse impact to groundwater aquifers and quality is anticipated to result from the proposed action. A geologic and engineering review was performed on the 8-point drilling plans to ensure that the cementing and casing programs adequately protect the downhole resources.

Mitigative Measures: None

Name of specialist and date: Fred Conrath 02/28/06

WATER QUALITY/HYDROLOGY – SURFACE

Affected Environment: Runoff water from the well locations would ultimately reach Vermillion Creek. The three QEP Wells would be located on plateaus and runoff water would flow through ephemeral drainages towards Vermillion Creek. All stream segments near the well pad location are presently supporting classified beneficial uses. No impaired stream segments occur near the project area.

Environmental Consequences: The well locations would require construction of three short access roads and three short pipelines. The proponent has incorporated water turnout ditches on the crowned and ditched access roads to manage runoff water and to reduce water erosion. Construction of the roads, well pads, pipelines, and installation of the specific drainage features should follow the recommendations provided in the Surface Operating Standards for Oil and Gas Development, 3rd Edition.

Increased sedimentation to Vermillion Creek during spring runoff or from high intensity summer/fall rainstorms would be the greatest potential impact to water quality. Although some sediment may be transported off site and eventually reach perennial waters, the mitigation provided in the Surface Use Plan and the Conditions of Approval will reduce the potential impacts caused by surface runoff.

Mitigative Measures: None

Name of specialist and date: Barb Blackstun 03/06/06

WETLANDS/RIPARIAN ZONES

Affected Environment: The proposed Sparks Ridge Unit #1 well and associated access road is within a ¼ mile of a developed spring. The developed spring consists of a trough and a livestock pond. This spring has been rated as Functioning at Risk with an upward trend.

Environmental Consequences: The proposed well and associated access road should not have any affect on the spring development. Well pad and access road should prevent excessive erosion from occurring. Any erosion that might occur would likely drain into the drainage north of the drainage in which the developed spring occurs in. No construction activity should have any direct impacts to the spring development.

Mitigative Measures: None

Name of specialist and date: Timothy Novotny 02/28/06

WILD & SCENIC RIVERS

Affected Environment: Not present.

Environmental Consequences: Not applicable.

Mitigative Measures: Not applicable

Name of specialist and date: Jim McBrayer 02/28/06

WILDERNESS, WSAs

Affected Environment: Not present.

Environmental Consequences: Not applicable.

Mitigative Measures: Not applicable

Name of specialist and date: Jim McBrayer 02/28/06

NON-CRITICAL ELEMENTS

FLUID MINERALS

Affected Environment: All three proposed wells are in favorability zone 4 (highest for oil and gas potential). These wells will penetrate the Wasatch, Fort Union, Almond, Ericson, Rock Springs, Baxter, Airport, Frontier, Mowry, Dakota and Morrison Formations. Bituminous coal seams with more than three thousand feet of overburden can be found in the lower Ft. Union Formation. Shallower thin beds of bituminous coal can be found in the Wasatch Formation as well. Their mineable value is low, but they may be valuable coal bed methane reservoirs and must be protected or isolated where encountered. It should be noted that the hydrology for coal bed methane production within the Sand Wash geologic basin is unfavorable even though the gas resource is large (Scott, et al., 1995).

Environmental Consequences: The casing and cementing program is adequate to protect all of the resources identified above. All coal seams and fresh water zones will also be protected. The high-pressure zones will be dealt with heavy mud weights and an adequately sized BOP system. All of these zones will be cased off.

Mitigative Measures: None

Name of specialist and date: Fred Conrath 02/28/06

PALEONTOLOGY

Affected Environment: The two geologic formations present at the surface are the Tertiary Age formation, Green River Formation, Luman Tongue unit (Tglu), and the Niland Tongue Member of the Wasatch Formation (Twn). The Twn formation is a soft and moderately resistant, tan, light- to dark-gray sandstone, shale, siltstone, oil shale, carbonaceous shale, and coal, and has been classified a class Ia formation for the potential occurrence of scientifically significant fossils. The Tglu formation is a moderately resistant, light- to medium brown fissile oil shale, siltstone, sandstone, limestone, carbonaceous shale, coal, and conglomerate. This formation has been classified as a Class II formation for the potential occurrence of scientifically significant fossils. Scientifically significant fossils are occasionally found within these two formations (Armstrong & Wolney, 1989). The potential for discovery of significant fossils on these locations are considered to be moderate to high. A class Ia classification will be applied to this project affording the most protection of paleontological resources.

Environmental Consequences: If any such fossils are located here, construction activities could damage the fossils and the information that could have been gained from them would be lost. The significance of this impact would depend upon the significance of the fossil. This impact can be effectively mitigated by ceasing operations and notifying the Field Office Manager immediately upon discovery of a fossil during construction activities. An assessment of the significance is made and a plan to retrieve the fossil or the information from the fossil is developed.

The proposed action could also constitute a beneficial impact to paleontological resources by increasing the chances for discovery of scientifically significant fossils.

Mitigative Measures: "Standard Discovery Stip", i.e., "If fossils are discovered during construction or other operations, all activity in the area will cease and the Field Office Manager will be notified immediately. An assessment of significance will be made within an agreed time frame. Operations will resume only upon written notification by the Authorized Officer."

References

Armstrong, Harley J. and Wolney, David G., 1989, Paleontological Resources of Northwest Colorado: A Regional Analysis, Museum of Western Colorado, Grand Junction, CO, prepared for Bur. Land Management, Vol. I of V.

Miller, A.E., 1977, Geology of Moffat County, Colorado, Colo. Geol. Surv. Map Series 3, 1:126,720.

Name of specialist and date: Robert Ernst 12/02/05

REALTY AUTHORIZATIONS

Affected Environment: The project route crosses or is adjacent to existing realty pipeline authorizations COC44229 and COC45795, held by Questar Gas Management Company. Wexpro holds an authorization for a water pipeline, COD049816, in the project area. There are three existing access road authorizations, COC44225 and COC50058 held by Wexpro and COC56737 held by Texaco. The project would not impact the existing roads.

Environmental Consequences: Existing pipelines could be accidentally damaged during construction activities. Impacts would be temporary until the damage is repaired.

Mitigative Measures: Damage to existing pipelines would be minimized by:

- Utilize the “One Call” system to locate and stake the centerline and limits of all underground facilities in the area of proposed excavations.
- Provide 48 hour notification to the owner/operator of facilities prior to performing any work within 10 feet of buried or above ground pipelines.

Name of specialist and date: Louise McMinn 02/23/06

SOILS

Affected Environment: The proposed three QEP Wells are staked on very level ground within the Diaflats-Fondillas complex soil-mapping unit. These moderately deep soils are well drained and found on dissected plateaus. Slopes within this unit average 2 to 15 percent. These soils formed in residuum derived from siltstone and fine-grained sandstone. Runoff is medium and the hazard of wind and water erosion is moderate.

Environmental Consequences: The construction and operation of the three QEP Wells would affect soils within and immediately adjacent to the proposed areas of disturbance. Increased soil erosion from wind and water would occur during construction of the well pads, pipelines, and access roads. Erosion would continue throughout the operational life of the wells. Loss of topsoil, soil compaction, and possible increases in sediment loads to drainages are impacts most likely to occur.

Vegetation and soil would be removed from approximately thirteen acres of land. Soil productivity would decline due to reduced soil microbial activity, impaired water infiltration, mixing of soil horizons, top soil loss, and introduction of weeds. Soil loss from construction would be greatest shortly after project start and would decrease in time as a result of stabilization through revegetation and reclamation of disturbed areas. Soil erosion would be reduced to an acceptable level with the mitigation described in the Surface Use Plan and Conditions of Approval in the approved APD. This mitigation will reduce the potential to have excessive sediments and salts in runoff water from the well sites.

Mitigative Measures: Additional mitigative measures will be employed to prevent or reduce accelerated erosion if it begins to occur within or on constructed drainage and diversion ditches or surface drainages affected by the roads or well pads.

Name of specialist and date: Barb Blackstun 03/06/06

VEGETATION

Affected Environment:

Sparks Ridge Unit Well #1- This proposed well is located in a sagebrush-grass and saltbush plant community. Dominant plants present include Wyoming big sagebrush (*Artemisia tridentata wyomingensis*), shadscale saltbush (*Atriplex confertifolia*), Nuttall's saltbush (*A. nuttallii*), spiny hopsage (*Grayia spinosa*), green rabbitbrush (*Chrysothamnus vicidiflorus*), western wheatgrass (*Agropyron smithii*), squirreltail (*Sitanion hystrix*), Indian ricegrass (*Oryzopsis hymenoides*), and Sandberg bluegrass (*Poa sandbergii*). Due to time of year and amount of snow cover, no forbs were seen although Hood's phlox (*Phlox hoodii*), longleaf phlox (*P. longifolia*), various *Aster* spp., desert parsley (*Lomatium* spp.), scarlet globemallow (*Sphaeralcea coccinea*), and desert buckwheat (*Eriogonum* spp.) are likely to be present. Non-natives present include flaxweed (*Descurania sophia*) and halogeton (*Halogeton glomeratus*). These species are present within the site of the proposed disturbance but not found in the surrounding area. This clayey site exhibits lower perennial grass abundance, greater shrub abundance, and greater weed abundance than surrounding sites.

Hiawatha Deep Unit Well #7- This proposed well is located in a sagebrush-grass plant community. Dominant plants include Wyoming big sagebrush, shadscale, greasewood, (*Sarcobatus vermiculatus*), rubber rabbitbrush (*Chrysothamnus nauseosus*), spiny horsebrush (*Tetradymia spinosa*), fiddle-neck (*Amsinckia* spp.), Hood's phlox (*Phlox hoodii*), western wheatgrass, squirreltail, Indian ricegrass, Sandberg bluegrass, and crested wheatgrass (*Agropyron cristatum*). Other than crested wheatgrass, non-natives include cheatgrass (*Bromus tectorum*), flaxweed, and halogeton. The site exhibits excellent abundance and vigor throughout all functional groups.

Hiawatha Deep Unit Well #15- This site is nearly identical to the site of the proposed Hiawatha Deep Unit Well #7.

Environmental Consequences, Proposed Action: The proposed action would remove approximately 13 acres of native vegetation for all three wells, pipelines, and access roads. This removal would be minor in the larger plant community. All or part of the area disturbed could be reclaimed in the short term if any or all of the wells fail to produce, but if any one well produces, portions of the total disturbance would be reclaimed as the drilling pads are shrunk down after well completion. All developed access roads would remain to producing wells. In the long term, after the life of each producing well has ended, all disturbances would be reseeded to native vegetation per the drilling and surface use

plans. As long as weeds are controlled and all disturbed areas are reseeded to prescribed mixes of native plant species and establishment is ensured as required, the negative impacts to the native plant communities will be effectively mitigated.

Environmental Consequences, No Action: This alternative would not negatively impact the plant communities, as no new disturbances would occur.

Mitigative Measures: None

Name of specialist and date: Hunter Seim 02/22/06

WILDLIFE, AQUATIC

Affected Environment: There is no aquatic wildlife habitat in or near the proposed project area.

Environmental Consequences: None

Mitigative Measures: None

Name of specialist and date: Timothy Novotny 02/28/06

WILDLIFE, TERRESTRIAL

Affected Environment: The proposed Hiawatha Deep Wells # 7, # 15 and the Sparks Ridge Well # 1 sites are within marginal habitat for mule deer. All three sites provide habitat for pronghorn antelope. The Sparks Ridge #1 is within pronghorn severe winter range. A variety of small mammals may also use the proposed well locations.

Environmental Consequences: Both mule deer and pronghorn antelope are likely to be displaced during project construction. It is estimated that approximately 3.5 acres of habitat per well will be lost as a result of this project. Construction activities associated with the development of the three wells, pipelines, and their associated access roads will likely displace wildlife from the project area. 13 acres of habitat will be lost as a result of this project although surrounding areas that will not be disturbed are sufficient to support displaced animals. Many animals that are displaced from the project area will return once construction activities have been completed.

Mitigative Measures: CO-9 For the Sparks Ridge Well #1, no surface disturbing activities will be permitted between December 1 and April 30 in order to protect winter big game animals from disturbance.

Name of specialist and date: Timothy Novotny 02/28/06

OTHER NON-CRITICAL ELEMENTS: For the following elements, those brought forward for analysis will be formatted as shown above.

Non-Critical Element	NA or Not Present	Applicable or Present, No Impact	Applicable & Present and Brought Forward for Analysis
Fluid Minerals			See Fluid Minerals
Forest Management	BB 03/06/06		
Hydrology/Ground		FC 02/28/06	
Hydrology/Surface		BB 03/06/06	
Paleontology			See Paleontology
Range Management		HS 02/22/06	
Realty Authorizations			See Realty
Recreation/Travel Mgmt		RS 03/06/06	
Socio-Economics		LM 02/23/06	
Solid Minerals		RE 12/02/05	
Visual Resources		JM 02/28/06	
Wild Horse & Burro Mgmt	VMD 12/27/05		

CUMULATIVE IMPACTS SUMMARY: Cumulative impacts may result from the development of the Three QEP Wells when added to non-project impacts that result from past, present, and reasonably foreseeable future actions. The potential exists for future oil and gas development throughout the Hiawatha Field. Currently numerous producing wells exist within a one-mile radius of the proposed wells. Other past or existing actions near the project area that have influence on the landscape are wildfire, recreation, hunting, grazing, and ranching activities.

Surface disturbance associated with oil and gas activity would increase the potential for erosion and sedimentation. Only a small reduction in available forage would be anticipated. Some wildlife species may be temporarily displaced by construction at the well site, access road, and future pipeline routes, but should return once construction is completed. Displacement of hunters and recreationists during the short-term construction and drilling periods would occur. Contrasts in line, form, color, and texture from development would impact the visual qualities on the landscape.

Over the last 20 years there has been a slow but steady increase in oil and gas production facilities within and adjacent to Vermillion Creek. Cultural resource surveys in the area have identified several prehistoric cultural resources. These resources were at one time further away from the industry activity. Now they are in close proximity to these facilities. As the Hiawatha Field is in-filled, with more pipeline, compressors, access roads, and pads being constructed, a real potential for impacts to known and yet to be recorded cultural resources is present.

Cumulative impacts to the plant communities within the gas lease and adjacent areas include an incremental reduction of continuity in the plant communities in terms of acreages that remain

undisturbed. Loss of continuity results in smaller and smaller areas of undisturbed native vegetation and the potential for loss of integrity within the larger plant community. Fragmented plant communities can lose resilience to natural and man-made disturbance due to isolation of areas from seed sources necessary for proper age class distribution of plants, and subsequently, a greater opportunity for stressors such as drought to have a more severe impact on the plant community as a whole. The increased disturbance also makes native plant communities more susceptible to invasion by annual weeds as vectors for weeds increase. Even with weed control measures applied, the potential for weeds to move further into undisturbed remnant areas increases as these remnants become smaller and more isolated from larger undisturbed areas.

Cumulative impacts to the livestock grazing operations in the area are also increased through the Proposed Action. The grazing allotment in which these wells are proposed is primarily a winter sheep allotment. The growth in wells, roads, and human activity has reduced the availability of forage in this area far beyond direct impacts caused by construction. Constant truck traffic and decreases in the size of undisturbed areas have resulted in the Canyon Creek/G Wash area becoming largely unavailable for sheep use. Halogeton which has increased among the new roads and well pads is toxic to sheep. The resulting impact to grazing activities permitted in the area is a loss of available Animal Unit Months (AUMs), i.e. a loss of the amount of livestock that the allotment can reasonably carry. Due to recent years of drought, the livestock operator has only lightly used this allotment, so direct impacts to grazing activities have not been fully felt. However, as precipitation patterns improve, there will be a likely significant decrease in the amount of livestock that can be permitted on the allotment. Utilization and production monitoring of unaffected areas remaining in the allotment would be necessary to determine a proper stocking rate after accounting for the loss of available forage from gas development (both direct and indirect) if improving precipitation patterns result in better forage conditions throughout the allotment.

Vermillion Creek and the surrounding areas have experienced an increase in oil and gas development in recent years. Over 35 miles of roads connect numerous wells in the Colorado portion of T12N, R101W. Little development exists west of Canyon Creek; however, there are 61 producing and 28 abandoned but unreclaimed wells east of the project area in T12N, R100W. Pad construction and the associated infrastructure of roads lead to fragmentation of habitat for wildlife species. As this area is developed, it can be expected that wildlife use of the area would decrease due to habitat fragmentation and decrease in security.

Many historic raptor nests associated with Vermillion Creek and Canyon Creek have not been active for the past several years. Oil and gas development may have made this area less suitable for these species by increasing disturbance, decreasing nest security and removing habitat for prey species. It is probable that raptors have moved away from developing areas to nest. As oil and gas development moves along the creek, it may disturb any new nests. Eventually, some raptors may be able to habituate to the increased disturbances. Habitat fragmentation from well pad construction and the associated roads have likely decreased the nesting suitability for other migratory birds. Ingelfinger (2001) found that roads associated with oil and gas development have a negative impact on passerines bird species. Bird densities were reduced within 100m of

each road. Due to the amount of new road construction and an increase in traffic on these roads, passerine populations in the area are likely decreasing.

Even with the amount of activity in the area, it is unlikely that oil and gas development would have significant impacts to white-tailed prairie dogs. Many of the prairie dog colonies have died out, likely due to a plague epidemic. New road construction provides a corridor for prairie dog movement, increasing the likelihood that inactive towns would be re-colonized in the future. Fragmentation of habitat does not seem to impact prairie dogs as severe as other species, providing that suitable forage remains.

The cumulative impacts of three new wells, their associated roads and the amount of gas development already existing in the area, will continue to degrade habitat for the greater sage grouse. Although there are no leks located near the three QEP Wells, the project area does provide nesting and brood rearing habitat for sage grouse. Fragmentation, mostly due to road construction, is an important factor contributing to a decrease in habitat quality. Oil and gas development combined with sagebrush die-offs may lead to decreased sage grouse use of the habitat.

Although big game species are able to adapt to disturbances better than other wildlife, increased development may still have some impacts to mule deer, antelope, and elk. Timing stipulations adequately protect big game species during critical times of the year. An increase in vehicle traffic will occur as the Hiawatha Field is developed. A significant impact to big game may be vehicle-animal collisions, as these are a major cause of mortality for big game species.

The cumulative effects of projected oil and gas development are minimized through Best Management Practices identified in the Surface Use Plan of the APD and the BLM required mitigation in the Conditions of Approval for the APD. Proper construction and drilling practices must comply with federal and state environmental regulations. All oil and gas wells in the area would be completed in accordance with Onshore Order No. 2. Reasonably foreseeable mineral development would occur under the guidelines of the Little Snake Resource Management Plan and the Colorado Oil and Gas Leasing and Development EIS.

References:

Ingelfinger, F. 2001. The Effects of Natural Gas Development on Sagebrush Steppe Passerines in Sublette County, Wyoming. University of Wyoming, Laramie, WY.

STANDARDS:

PLANT AND ANIMAL COMMUNITY (animal) STANDARD: The proposed project area provides productive habitat for a variety of big game, special status species and small mammals. Habitat conditions at the three well pad locations are considered good and are currently capable of supporting healthy wildlife populations. The disturbance associated with the development of these three wells will likely result in a short-term displacement of wildlife from the project area. Once construction is complete, many will return to the project area but may avoid use of the well

pad area. Surrounding habitat that will remain undisturbed should be sufficient to support displaced wildlife. This standard is currently being met and will continue to be met in the future.

Name of specialist and date: Timothy Novotny 02/28/06

SPECIAL STATUS, THREATENED AND ENDANGERED SPECIES (animal)

STANDARD: There are no threatened or endangered species or habitat for such species in or near the project area. The Sparks Ridge Well #1 does contain nesting and wintering habitat for greater sage grouse, a BLM special status species. The development of one well within nesting habitat and wintering habitat should not prevent this areas ability to meet this standard provided that the project proponent follows recommended mitigation to protect nesting and wintering sage grouse.

Name of specialist and date: Timothy Novotny 02/28/06

PLANT AND ANIMAL COMMUNITY (plant) STANDARD: The Proposed Action would completely remove approximately 13 acres of native vegetation. As long as required weed control and reclamation practices are followed, the Proposed Action would meet this standard as negative impacts to the larger plant community would be minimized and the disturbances would be essentially temporary. The No Action Alternative would meet this standard, as no new disturbances would occur.

Name of specialist and date: Hunter Seim 02/22/06

SPECIAL STATUS, THREATENED AND ENDANGERED SPECIES (plant)

STANDARD: There are no federally listed threatened or endangered or BLM sensitive plant species within or in the vicinity of any of the three proposed wells. This standard does not apply.

Name of specialist and date: Hunter Seim 02/22/06

RIPARIAN SYSTEMS STANDARD: The developed spring near the Sparks Ridge #1 well is making progress towards meeting the standard for riparian systems. The propose Sparks Ridge Well #1 will not have any negative impact on this system. The Hiawatha Deep Wells #7 and 15 will not have any impact on any riparian systems. This standard is currently being met and will continue to be met in the future.

Name of specialist and date: Timothy Novotny 02/28/06

WATER QUALITY STANDARD: The proposed action would meet the public land health standard for water quality. Interim reclamation of the unused area on the well pads will be completed to minimize sheet and rill erosion from the well sites. When the well pads are no longer needed for production operations, the disturbed areas would be reclaimed to approximate original contours, topsoil would be redistributed, and adapted plant species would be reseeded. These Best Management Practices would help to reduce accelerated erosion of the sites. No stream segments near this project are listed as impaired.

Name of specialist and date: Barb Blackstun 03/06/06

UPLAND SOILS STANDARD: The proposed action will not meet the upland soil standard for land health, but it is not expected to while the well locations, pipelines, and access roads are used for operations. The well pad sites and access roads will not exhibit the characteristics of a healthy soil. Several Best Management Practices have been designed into the project or are attached as mitigating measures that will reduce impacts to and conserve soil materials. Upland soil health will return to the well pad and access road disturbances after well abandonment and reclamation practices have been successfully achieved.

Name of specialist and date: Barb Blackstun 03/06/06

PERSONS/AGENCIES CONSULTED: Uintah and Ouray Tribal Council, Colorado Native American Commission, Colorado State Historic Preservation Office.

FINDING OF NO SIGNIFICANT IMPACT (FONSI)
EA CO-100-2006-008

Based on the analysis of potential environmental impacts contained in the EA and all other available information, I have determined that the proposal and the alternatives analyzed do not constitute a major Federal action that would adversely impact the quality of the human environment. Therefore, an EIS is unnecessary and will not be prepared. This determination is based on the following factors:

1. Beneficial, adverse, direct, indirect, and cumulative environmental impacts have been disclosed in the EA. Analysis indicated no significant impacts on society as a whole, the affected region, the affected interests, or the locality. The physical and biological effects are limited to the Little Snake Resource Area and adjacent land.
2. Public health and safety would not be adversely impacted. There are no known or anticipated concerns with project waste or hazardous materials.
3. There would be no adverse impacts to regional or local air quality, prime or unique farmlands, known paleontological resources on public land within the area, wetlands, floodplain, areas with unique characteristics, ecologically critical areas, or designated Areas of Critical Environmental Concern.
4. There are no highly controversial effects on the environment.
5. There are no effects that are highly uncertain or involve unique or unknown risk. Sufficient information on risk is available based on information in the EA and other past actions of a similar nature.
6. This alternative does not set a precedent for other actions that may be implemented in the future to meet the goals and objectives of adopted Federal, State, or local natural resource related plans, policies, or programs.
7. No cumulative impacts related to other actions that would have a significant adverse impact were identified or are anticipated.
8. Based on previous and ongoing cultural surveys, and through mitigation by avoidance, no adverse impacts to cultural resources were identified or anticipated. There are no known American Indian religious concerns or persons or groups who might be disproportionately and adversely affected as anticipated by the Environmental Justice Policy.

9. No adverse impacts to any threatened or endangered species or their habitat that was determined to be critical under the Endangered Species Act were identified. If, at a future time, there could be the potential for adverse impacts, treatments would be modified or mitigated not to have an adverse effect or new analysis would be conducted.

10. This alternative is in compliance with relevant Federal, State, and local laws, regulations, and requirements for the protection of the environment.

DECISION AND RATIONALE: I have determined that approving these three APDs is in conformance with the approved land use plan. It is my decision to implement the project with the mitigation measures provided in the Application for Permit to Drill and the Conditions of Approval. The project will be monitored as stated in the Compliance Plan outlined below.

MITIGATION MEASURES: The mitigation measures for this project are found in the file room of the Little Snake Field Office. The APD's 13-point surface use plan, well location maps, and the Conditions of Approval are found in the well's case file labeled COC02981, Well #1; COD051417, Well #7; and COC0122825, Well #15.

COMPLIANCE PLAN(S):

Compliance Schedule

Compliance will be conducted during the construction phase and drilling phase to insure that all terms and conditions specified in the lease and the approved APD are followed. In the event a producing well is established, periodic inspections as identified through the Inspection and Enforcement Strategy and independent well observations will be conducted. File inspections will include a review of all required reports and the Monthly Report of Operations will be evaluated for accuracy.

Monitoring Plan

The well location and access road will be monitored during the term of the lease for compliance with pertinent Regulations, Onshore Orders, Notices to Lessees, or subsequent COAs until final abandonment is granted; monitoring will help determine the effectiveness of mitigation and document the need for additional mitigative measures.

Assignment of Responsibility

Responsibility for implementation of the compliance schedule and monitoring plan will be assigned to the Fluid Mineral staff in the Little Snake Field Office. The primary inspector will be the Petroleum Engineering Technician, but the Petroleum Engineer, Natural Resource Specialist, Realty Specialist, and Legal Instruments Examiner will also be involved.

SIGNATURE OF PREPARER:

DATE SIGNED:

SIGNATURE OF ENVIRONMENTAL REVIEWER:

DATE SIGNED:

SIGNATURE OF AUTHORIZED OFFICIAL:

DATE SIGNED:

ADVISORY NARRATIVES AND CONDITIONS OF APPROVAL FOR APPLICATIONS
FOR PERMIT TO DRILL (APDs)

Operator: Well No.:

Location: NESW Sec., TN, RW Lease No.: COC

Little Snake Field Office

The Bureau of Land Management, Little Snake Field Office, address and telephone contacts are:

Address:	455 Emerson Street, Craig, CO 81625	
Office Phone:	(970) 826-5000	Fax: (970) 826-5002
Petroleum Engineer:	Stanley Eng,	Office Phone (970) 826-5075
Natural Resource Specialist:	Barb Blackstun	Office Phone (970) 826-5097
Geologist:	Fred Conrath,	Office Phone (970) 826-5098 Home Phone (970) 870-9148
Assistant Field Manager:	Jerry Strahan,	Office Phone (970) 826-5099

All lease and/or unit operations are to be conducted in such a manner to ensure full compliance with the applicable laws, regulations (43 CFR Part 3160), Onshore Oil and Gas Orders No. 1, 2, 3, 4, 5, 6 and 7, Notice to Lessees, and the approved plan of operations. Approval of this application does not relieve you of your responsibility to obtain other required federal, state, or local permits. A copy of the approved Form 3160-3 and the pertinent drilling plan, along with any advisory narratives and conditions of approval, shall be available at the drillsite to authorized representatives at all times. The operator is considered fully responsible for the actions of his subcontractors.

Your review and appeal rights are contained in 43 CFR 3165.3 and 3165.4.

CONDITIONS OF APPROVAL

STANDARD CONDITIONS

1. The Little Snake Field Office will be given 48-hour notification prior to commencing construction and/or reclamation work. Contact the Little Snake Field Office (970) 826-5000 to report work, which will commence.
2. Notify Little Snake Field Office at (970) 826-5000 at least 48 hours in advance to witness running and cementing of surface casing and testing of the BOPE.
3. The notice of spud will be reported orally to the Little Snake Field Office (970) 826-5000 at least 24 hours after spudding. This notice shall include spud date, time, details of spud (hole, casing, cement, etc.), API well number, and date the rotary rig was moved on location. If the spudding occurs on a weekend or holiday, wait until the following regular workday to make this report. The oral notice shall be followed by written notification within 5 working days.
4. No hazardous materials, hazardous wastes, or trash will be disposed of on public lands or on private surface overlying the oil and gas lease. If a release does occur, it will be reported to the Little Snake Field Office immediately at (970) 826-5000.
5. The area to be utilized for storage of the reserve pit overburden will have the brush cleared and the topsoil salvaged before excavation of the reserve pit commences.
6. All survey stakes representing the leveled drill pad, the crest of excavations, the toe of embankments, the reserve pit, and the access road will be in place prior to construction. Staking shall include the well location, two

200-foot directional reference stakes, the exterior dimensions of the drill pad, reserve pit and other areas of surface disturbance, cuts and fills, and centerline flagging of new roads with road flagging being visible from one to the next.

7. Construction activities will not be allowed to commence if the topsoil cannot be separated from the subsoil during adverse environmental conditions (i.e. when soils are frozen or muddy).

8. Surface disturbance and vehicular travel will be limited to the approved location and approved access route. Any additional area needed will be approved in advance.

9. Drainage for runoff water will be provided to divert runoff water away from the reserve pit, cut portions of the well location and the topsoil stockpile. Runoff water that concentrates and forms channels on the well location will be diverted and/or dispersed to prevent erosion of the fill slopes. Any ditches designed to provide runoff drainage will be constructed on a minimal grade and will release water onto undisturbed ground without causing accelerated erosion. The operator will take additional measures if erosion is occurring within the runoff water drainage system.

10. If fossils are discovered during construction or other operations, all activity in the area will cease and the Field Office Manager will be notified immediately. An assessment of significance will be made within an agreed timeframe. Operations will resume only upon written notification by the Authorized Officer.

11. STANDARD STIPULATION: If cultural or paleontological resources are discovered during exploration operations under this license, the licensee shall immediately notify the Field Officer Manager and shall not disturb such discovered resources until the Field Officer Manager issues specific instructions.

a. Within 5 working days after notification, the Field Office Manager shall evaluate any cultural resources discovered and shall determine whether any action may be required to protect or to preserve such discoveries.

b. The cost of data recovery for cultural resources discovered during exploration operations shall be borne by the licensee, if the licensee is ordered to take any protective measures. Ownership of cultural resources discovered shall be determined in accordance with applicable law.

c. The operator is responsible for informing all persons who are associated with the operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are encountered or uncovered during any project activities, the operator is to immediately stop activities in the immediate vicinity of the find and immediately contact the Authorized Officer (970) 826-5087. Within five working days the Authorized Officer will inform the operator as to:

1. Whether the materials appear eligible for the National Register of Historic Places;

2. The mitigation measures the operator will likely have to undertake before the identified area can be used for project activities again and,

d. If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the Authorized Officer will assume responsibility for whatever recordation, and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The Authorized Officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Officer that the required mitigation has been completed, the operator will then be allowed to resume construction.

e. Pursuant to 43 CFR 10.4(g) (Federal Register Notice: Monday December 4, 1995, Vol 60, No. 232) the holder of this authorization must notify the Authorized Officer, by telephone (970) 826- 5087, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the Authorized Officer.

12. The reserve pit will be designed to exclude runoff water and maintain a 2-foot freeboard between the maximum fluid level and the lowest point of containment. The reserve pit will not be used for disposal of any materials or fluids, except for materials or fluids specifically addressed in the drilling program or having a subsurface origin. If oil or oily substance is in the reserve pit, it must be removed within 30 days after the drilling rig is removed. Netting will be installed if oily substance is present in the reserve pit.
13. The perimeter of the reserve pit and production pits, if any, will be fenced with woven wire with 2 strands of barbed wire, properly spaced, on the top and all held in place by side posts and corner H-braces to inhibit entry by livestock and wildlife. The fence will be maintained until backfilling or removal of facilities occurs.
14. In the event downhole operations threaten to exceed the required 2-foot freeboard, regarding reserve pit fluids, immediate notification will be provided to the Authorized Officer with concurrent steps taken to minimize the introduction of additional fluids, until alternative containment methods can be approved.
15. Reserve pit fluids will be allowed to evaporate through one entire summer season (June-August) after drilling is completed, unless an alternative method of disposal is approved. After the fluids disappear, the reserve pit mud will be allowed to dry sufficiently to allow backfilling. The backfilling of the reserve pit will be completed within 30 days after dry conditions exist and will meet the following minimum requirements:
 - a. Backfilling will be done in such a manner that the mud and associated solids will be confined to the pit and not squeezed out and incorporated in the surface materials.
 - b. There will be a minimum of 5 feet of cover (overburden) on the pit.
 - c. When the work is completed, the pit areas will support the weight of heavy equipment without sinking and over time shall not subside over 6-inch depth.
16. If installed, production facilities will be located on cut portions of the existing drill pad.
17. In the event production is established, all land surfaces that are to remain free of vegetation (roads and well location) will be monitored for and protected from wind erosion; dry powdery soil will be treated to minimize wind erosion. The unused disturbed areas surrounding the well location will be re-contoured to appropriate confirmation as soon as possible. Some or all of the stockpiled topsoil will be evenly distributed over these re-contoured areas. Brush cleared prior to construction of the well site shall be scattered back over the re-contoured area.
18. Prior approval is required to remove reserve pit fluids from the reserve pit; a request of this type will need to include the destination of the fluids and if the destination is not a State approved facility, the request will include State approval of the destination.
19. All pits, cellars, rat holes and other bore holes unnecessary for further lease operations, excluding the reserve pit, will be backfilled immediately after the drilling rig is released. Pits, cellars and/or bore holes that remain on location must be fenced as specified for the reserve pit in the applicant's Surface Use Plan.
20. In the event a producing well is established, all new production equipment, which has open-vent exhaust systems, will have these exhaust systems constructed in such a way to prevent the entry and perching of birds and bats.
21. All permanent structures (on-site for six months or longer) constructed or installed (including oil well pumpjacks) will be painted a flat, non-reflective, earthtone color to match the standard environmental colors, as determined by the Rocky Mountain Five-State Interagency Committee. All facilities will be painted within six months of installation. Facilities required to comply with OSHA (Occupational Safety and Health Act) will be excluded.

22. Surface facilities should appear to blend in to the existing landscape to the greatest possible extent. Facilities should not be located on ridgelines or extend above them. Facilities should be minimal in size (or located underground) and colored and texture to blend in with the surroundings.

23. A containment berm must be installed around all storage tanks, including temporary tanks. Compaction and construction of the berm surrounding the tank or tank battery will be designed to prevent lateral movement of fluids through the utilized materials, prior to storage of fluids. The berm must be constructed to contain at minimum 110 percent of the storage capacity of the largest tank within the berm. All loading lines will be placed inside the berm.

24. Control of noxious weeds will be required through successful vegetation establishment and/or herbicide application. It is the responsibility of the lease operator to insure compliance with all local, state, and federal laws and regulations, as well as labeling directions specific to the use of any given herbicide.

25. Reclamation Performance Standard

The lessee is required to use the reclamation practices necessary to reclaim all disturbed areas. Reclamation will ensure surface and subsurface stability, growth of a self-regenerating permanent vegetative cover and compatibility with post land use. The vegetation will be diverse and of the same seasonal growth as adjoining vegetation. Post land use will be determined by the Authorized Officer but normally will be the same as adjoining uses.

Reclamation practices which must be applied or accomplished are: re-grading to the approximate original contour, effectively controlling noxious weeds, separating, storing and protecting topsoil for redistribution during final abandonment, seeding and controlling erosion. If topsoil is not present, or quantities are insufficient to achieve reclamation goals, a suitable plant growth media will be separated, stored and protected for later use. Reclamation will begin with the salvaging of topsoil and continue until the required standards are met. If use of the disturbed area is for a short time (less than one year), practices, which ensure stability, will be used as necessary during the project, and practices needed to achieve final abandonment will commence immediately upon completion of the approved activity use and be completed, with the exception of vegetative establishment, within one year. If use of the area is for longer periods of time (greater than one year), interim reclamation is required on the unused areas. Interim reclamation of the unused areas will begin immediately upon completion of the permanent facility(s) and be completed, with exception of vegetative establishment, within one year. For both short and long term projects vegetative establishment will be monitored annually. If the desired vegetation is not established by the end of the second growing season, cultural practices necessary for establishment will be implemented prior to the beginning of the next growing season. Interim reclamation, unless otherwise approved, will require meeting the same standards as final abandonment with the exception of original contour, which may be only partially achievable.

Annual reports consisting of reclamation practices completed and the effectiveness of the reclamation will be provided to the Little Snake Field Office. The first report will be due in January following initiation of reclamation practices and annually thereafter until final abandonment is approved.

There are numerous reclamation practices and techniques that increase the success rate of reclamation and stabilization. With the exception of those stated above, it is the lessee's prerogative to use those (s)he chooses to accomplish the objective. However, it is recommended that state-of-the-art reclamation, stabilization, and management practices be used to achieve the desired objective in a timely and cost-effective manner.

The following definitions and measurements will be used to accomplish and determine if reclamation has been achieved:

Permanent vegetative cover will be accomplished if the basal cover of perennial species, adapted to the area, is at least ninety (90) percent of the basal cover of the undisturbed vegetation of adjoining land or the potential basal cover as defined in the Soil Conservation Service Range Site(s) for the area.

Diverse will be accomplished if at least two (2) perennial genera and three (3) perennial species, adapted to the area, make up the basal cover of the reclaimed area in precipitation zones thirteen (13) inches or less and three (3) perennial genera and four (4) perennial species in precipitation zones greater than thirteen (13) inches. One species will not make up more than fifty (50) percent of the perennial vegetation by basal cover.

Self-regenerating and adapted to the area will be evident if the plant community is in good vigor, there is evidence of successful reproduction, and the species are those commonly used and accepted in the area.

Surface stability will be accomplished if soil movement, as measured by deposits around obstacles, depths of truncated areas, and height of pedestalling, is not greater than three tenths (0.3) of an inch and if erosion channels (rills, gullies, etc.) are less than one (1) inch in depth and at intervals greater than ten (10) feet.

If this standard is not met by the end of the second growing season, two alternatives exist depending on the severity of the erosion:

If erosion were greater than two (2) times the allowable amount, corrective action would have to be taken by the responsible company at that time.

If erosion is less than or equal to two (2) times the allowable amount, and it is determined the erosion occurred during vegetative establishment and the site may become stable, no corrective action would be required at that time. Another check (and measurement) would be performed a year later to determine if stability standards had been met. If the original measurements have not increased by more than the allowed standard, the standard would be considered met. However, if the increase were greater than the allowed standard, corrective action would be required.

Subsurface stability (mass wasting event) is of concern if disturbance has included excavation over four (4) feet in depth and greater than 10,000 square feet in area on slopes thirty five (35) percent and greater, or on any erosion-prone slope (Danforth Hills, Vermillion Bluffs, and badland areas). When these conditions occur, length of liability for reclamation and final abandonment will continue for ten (10) years following re-contouring to original contour or for such time that climatic patterns provide two (2) consecutive years in which measurable precipitation totals at least 120 percent of average from October 1 through September 30, as measured by data averaged from nearby regional weather stations.

The Authorized Officer may waive this stipulation, or portions of it. Such waiver will be documented and justified when not applicable, or when objectives are accomplished through another method.

SITE SPECIFIC CONDITIONS

26. A Pesticide Use Proposal (PUP) will be approved prior to application of herbicides and/or other pesticides on Federal surface; contact the Little Snake Field Office to obtain a PUP form to request this authorization. Submit the PUP two (2) months in advance of planned application. In the event you elect to apply herbicide or other pesticide as described and authorized on the approved PUP, you must report this use within 24 hours on Bureau of Land Management form titled Pesticide Application Record.

27. FOR WELL #1 ONLY: In order to protect nesting sage grouse, no construction or drilling activities will take place between March 1 and June 30. This timing restriction does not apply to operation and maintenance of production facilities.

28. FOR WELL #1 ONLY: No surface use is allowed during December 1 through April 30 to protect big game winter range. An exception may be granted under mild winter conditions for the last 60 days of the closure. This does not apply to operation and maintenance of production facilities.

28. The access road constructed will be crowned, ditched, and maintained to provide a 14 to 16 foot travel way. Total width of authorized disturbance is 50 feet. Water turnouts needed to provide additional drainage from the road ditch will be constructed not to exceed 2 percent slope to minimize soil erosion.

29. Culverts will be installed keeping the inlet and the outlet on original grade and sized to adequately drain the surface runoff. (18" minimum)
30. In the event that topsoil cannot be properly distributed during reclamation, additional precautions will be taken to minimize erosion of subsoil. Periodic monitoring to assess site specific environmental conditions, timing of operations, and use of mulches and/or barriers may be required to ensure that erosion is not significant within the entire well pad location disturbance and access road easement.
31. Additional mitigative measures will be employed to prevent or reduce accelerated erosion if it begins to occur within or on constructed drainage and diversion ditches or surface drainages affected by the road, well pad, well pad embankments, or pipeline corridor.
32. Utilize the "One Call" system to locate and stake the centerline and limits of all underground facilities in the area of proposed excavations.
33. Provide 48-hour notification to the owner/operator of facilities prior to performing any work within 10 feet of buried or aboveground pipelines.
34. All pipelines shall be buried and trenches shall be compacted during back-filling. Pipeline trenches will be maintained in order to correct settlement and prevent erosion.
35. All pipeline construction and maintenance activities will be contained within the 25-foot pipeline easement. Exception provided only for waterbars and erosion control. Vehicular access for reclamation, maintenance, and emergencies is authorized, but pipeline routes will not be utilized as access routes.
36. Surface soil material will be stockpiled to the side of the pipeline routes during pipeline construction. Surface soil material will be segregated and will not be mixed or covered with subsurface material. Surface disturbance will be minimized to the maximum extent possible.
37. In the event that topsoil cannot be properly distributed during reclamation, additional precautions will be taken to minimize erosion of subsoil. Periodic monitoring to assess site specific environmental conditions, timing of operations, and use of mulches and/or barriers may be required to ensure that erosion is not significant within the entire well pad location disturbance, road easement, and pipeline easement.
38. Pipeline routes will be graded to conform to the adjacent terrain, waterbarred, and seeded.
39. Install pipeline warning signs indicating location of buried pipeline, company name, and telephone number.

REGULATORY REMINDERS

- A. This permit is valid for a period of one year from the date of approval. Any requests for extensions must be submitted prior to the end of the one-year period. If the permit terminates, any surface disturbance created under the permit must be rehabilitated in accordance with the approved plan within 90 days of termination, unless otherwise approved by the Authorized Officer. An expired permit may be reinstated at the Authorized Officer's discretion, however, future operations may require a new application be filed for approval.
- B. All drilling operations, unless otherwise specifically approved in the APD, must be conducted in accordance with Onshore Oil and Gas Order No. 2; Drilling Operations.
- C. All 7-Day Requirement responses are made part of this APD.
- D. There shall be no deviation from the proposed drilling and/or workover program as approved, without prior approval from the Little Snake Field Office. Safe drilling and operating practices must be observed.

E. Approval of this application does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease, which would entitle the applicant to conduct operations thereon.

F. No location will be constructed or moved, no well will be plugged, and no drilling or workover equipment will be removed from a well to be placed in a suspended status without prior approval of the Little Snake Field Office. If operations are to be suspended for more than 30 days, prior approval for certain well operations must be obtained and notification given before resumption of operations in accordance with 43 CFR 3162.3-2 and 3162.3-4.

G. In the case of newly drilled dry holes or failures, and in emergency situations, oral approval for subsurface abandonment operations may be granted by the Little Snake Field Office. Oral approvals must be confirmed in writing (Notice of Intention to Abandon (Form 3160-5)) within 15 days. Unless the plugging is to take place immediately upon receipt of oral approval, the appropriate resource area must be notified at least 48 hours in advance of the plugging of the well, in order to provide a representative the opportunity to witness plugging operations.

H. Whether the well is completed as a dry hole or as a producer, "Well Completion and Recompletion Report and Log" (Form 3160-4) must be submitted not later than 30 days after completion of the well or after completion of operations being performed, in accordance with Onshore Oil and Gas Order No. 1. Daily drilling reports, a copy of all logs, core descriptions, core analyses, well-test data, geologic summaries, sample descriptions, and all other surveys or data obtained and compiled during the drilling, workover, and/or completion operations (with Form 3160-4) will be filed and sent to the Little Snake Field Office, 455 Emerson Street, Craig, Colorado 81625. Samples (cuttings, fluid, and/or gas) will be submitted only when requested by the Authorized Officer.

I. Section 102 (b) (3) of the Federal Oil and Gas Royalty Management Act of 1982, as implemented by the applicable provisions of the operating regulations at Title 43 CFR 3162.4-1 (c), requires that "not later than the fifth business day after any well begins production on which royalty is due anywhere on a least site or allocated to a lease site, or resumes production in the case of a well which has been off production for more than 90 days, the operator shall notify the authorized officer by letter or sundry notice, Form 3160-5, or orally to be followed by a letter or sundry notice, or the date on which such production has begun or resumed."

The date on which a well commences production, or resumes production after having been off production for more than 90 days is to be construed as follows:

1. For an oil well, the date on which liquid hydrocarbons are first sold or shipped from a temporary storage facility, such as a test tank or the date on which liquid hydrocarbons are first produced into a permanent storage facility, whichever occurs first;
2. For a gas well, that date on which gas is first measured through sales metering facilities or the date on which associated liquid hydrocarbons are first sold or shipped from a temporary storage facility, whichever occurs first. For purposes of this provision, a gas well shall not be considered to have been off production unless it is incapable of production.

If you fail to comply with this requirement in the manner and time allowed, you shall be liable for a civil penalty of up to \$10,000 per violation for each day such violation continues, not to exceed a maximum of 20 days. See Section 109(c) (3) of the Federal Oil and Gas Royalty Management Act of 1982 and the implementing regulations at Title 43 CFR 3163.2(e) (2).

J. This APD is approved subject to the requirement that, should the well be successful (completed for production or recompleted for production in a new interval), the Little Snake Field Office must be notified when it is placed in a producing status. Such notification may be provided orally if confirmed in writing, and must be received in the Little Snake Field Office by not later than the 5th business day following the date on which the well is placed on production. The notification shall provide, as a minimum, the following information items:

1. Operator name
2. Well name, number, and location

3. Date well was placed on production
4. The lease, or communitized tract, or unit participating area to which the well's production is attributable.
- K. A separate Monthly Report of Operations, Form 3160-6, shall be submitted for each lease, unit participating area, or communitization agreement, beginning with the month in which drilling operation commence, in accordance with 43 CFR 3162.4-3. This report shall be sent to Minerals Management Service, Production Accounting Division, P.O. Box 17110, Denver, Colorado 80217.
- L. If at any time the facilities located on public lands authorized by the terms of the lease are no longer included in the lease (due to contraction in the unit or other lease or unit boundary change) the BLM will process a change in authorization to the appropriate statute. The authorization will be subject to appropriate rental, or other financial obligation determined by the Authorized Officer.
- M. All produced liquids must be contained, including the dehydrator vent/condensate line effluent. All production pits must be bermed and fenced.
- N. Gas produced from this well may not be vented or flared beyond an initial, authorized test period of 30 days or 50 MMCF following completion, whichever comes first, without the prior written approval of the authorized officer. Should gas be vented or flared without approval beyond the authorized test period, you may be directed to shut the well in until the gas can be captured or approval to continue venting or flaring is granted and you may be required to compensate the lessor for that portion of the gas that was vented or flared without approval which is determined to have been avoidably lost.
- O. Produced water from newly completed wells may be temporarily disposed of into the reserve pit for a period of up to 90 days. During the 90-day periods, an application for approval of a permanent disposal method and location will be submitted according to Onshore Order No. 7 for approval.
- P. A schematic facilities diagram as required by CFR 43, Part 3162.7-5, shall be submitted to the Little Snake Field Office within 60 days of installation or first production, whichever occurs first. All site security regulations as specified in Onshore Order No. 3 shall be adhered to. All product lines entering and leaving hydrocarbon storage tanks will be effectively sealed in accordance with 3162.7-5(b).
- Q. The permit holder is required to use certified weed free hay, straw and mulch on BLM lands in Colorado should the use or storage of hay, straw or mulch be necessary. Any person who knowingly and willfully violates this regulation may be subject to a fine of not more than \$1,000 or imprisonment of not more than 12 months, or both as defined in 43 USC 1733 (a).